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Positive Psychology Perspectives on Social Values and their Application to Intentionally Delivered Sustainability Interventions

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Abstract

There is increasing interest within sustainability science to examine the intersection between well-being, values and environmental outcomes. Given the emergent nature of this field, this paper looks to the broader intervention psychology and well-being literature who have well-established theories and methods for understanding and applying social values, as related to well-being outcomes. We restrict our analysis to three approaches conceptually aligned to positive psychology; a strength-focused approach to understanding factors underpinning optimal individual well-being. We review the theoretical and applied approaches of self-determination theory (SDT), character strengths and virtues (CSV) and acceptancy and commitment therapy (ACT). To extrapolate our review to the environmental values literature, we offer a summary table to detail key concepts (and articles) which sustainability scientists may draw upon in their work against the dimensions of (1) elicitation process, (2) value provider and (3) value concept. We then compare the literature of values and well-being as conceptualised across the three positive psychology approaches and environmental values literature. We identify the positive psychology pathways of 'value activation' and 'healthy values' as alternative methods for sustainability scientists to consider the relationship between values and well-being. The paper suggests that mindfulness could be applied as a method to clarify and activate values within a nature exposure context, which harnesses the qualities of both the environmental values and positive psychology scholarship. A case example is offered which brings focus to well-being and sustainability outcomes, the intersection of value pathways, and intervention components drawn from both disciplines.

Introduction

Globally, there is growing interest in the contributions of nature experience to human well-being. Exposure or access to natural environments can act to promote health (e.g., reduce obesity and improve mental health), encourage healthy behaviours (e.g., social interaction, healthy eating), or to decrease risk factors such as air pollution or urban heat (see van den Bosch and Ode Sang 2017; Kabisch et al. 2017 for reviews). Environmental values scholars have also demonstrated a positive relationship between cultural ecosystem services and well-being (Bieling et al. 2014;), such as how environmental spaces and cultural practices shape place attachment, spirituality and inspiration (Bryce et al. 2016; Bullock et al. 2018)

While direct experience with nature is fundamental to human well-being, there are other ways to understand the relationships between values and well-being. For example, a recent review highlights how the inclusion of relational values of nature is inherently important for a flourishing life (Knippenberg et al. 2018). Here the focus is on a sub-category of relational values called eudemonic values or the essential components of a good, meaningful life.

The relationships between eudemonic (among other value types) and well-being have been considered across a range of psychological streams, but in the past two decades this scholarship has significantly extended through the discipline of 'positive psychology'. This represents an 'umbrella term' (Pawelski, 2016), which is characterised by a broad stream of theories and applications that is focused on strengthening human well-being and wellness (Seligman and Csikszentmihalyi 2000). It has drawn upon an applied approach to optimal functioning, and considers the strengths, virtues and processes that enable individuals, communities and organisations to thrive or experience optimal well-being (Pawelski 2016). The discipline has developed in rebuke of an illness or deficit orientation to understanding psychological functioning that has preoccupied 20th Century scholarship (Maddux 2016). In other words, there has been a preoccupation with reducing psychological problems (stress, clinical symptoms, anger, aggression, personality traits) within the literature.

There are many reasons for sustainability scientists to become interested in positive psychology. First, there has been a recent call for sustainability scientists to consider the integration of social-ecological approaches, at the conceptual, methodological, disciplinary and functional levels (Guerrero et al. 2018). Second, a range of sustainability science constructs share content alignment with positive psychology (e.g., eudemonic values van den Born et al. 2018; mindfulness Wamsler, 2018; Wamsler and Brink, 2018). Third, positive psychology has brought interest to role of values as a moderator of sustainability outcomes (e.g., Corall-Verdugo et al. 2015). Fourth, positive psychology is interested in the role of natural environments to activate well-being and sustainability outcomes (e.g., Passmore and Holder 2017). Finally, positive psychology can offer new lenses and approaches to protect the environment and activate sustainable behaviour (see review by Corral-Verdugo, 2012).

While this body of literature appears to offer significant utility for sustainability scientists (for review see Corral-Verdugo, 2012), we are concerned that sustainability scientists rarely engage with the depth of values and well-being theories that are being operationalised within positive psychology. We are not aware of any studies that have critically compared how values or well-being have been conceptualised and assessed in the environmental values and positive psychology literature, nor how such insights can inform sustainability science and practice. It is postulated that such insights could support the design of *new integrative interventions that activate different types of social values, thereby promoting human flourishing as well as environmental sustainability*. It also broadens the focus of health and well-being discussions from access or exposure to quality nature, to a consideration of the underlying psychological processes that promote or constrain interaction with natural environments.

The broad aim of this paper is to review and compare positive psychology and environmental values approaches to well-being and values. We offer new integrative insights and perspectives that can inform a deeper understanding and application of values through intentionally delivered interventions designed to achieve sustainability and well-being outcomes. The paper has three key objectives:

- To critically compare how values are understood, constructed and operationalised within the positive psychology and environmental values literatures.
- To critically compare how positive psychology and environmental values literature have considered the intersections between values and well-being.
- To offer future considerations for the integration of positive psychology and environmental values literatures to deliver interventions which may lead to well-being and sustainability outcomes.

To provide a context for the review, this paper provides a working definition of 'well-being'. The paper then introduces the positive psychology literature and outlines three well-developed approaches that have sought to understand how social values affect individual well-being. We summarise each approach's scholarship related to sustainability outcomes, and then provide consolidated themes that offer utility for both sustainability and positive psychology scholars.

Conceptualising well-being

Across the sustainability, psychological and health literatures there is no unified definition of 'well-being' (Dodge et al. 2012; Bryce et al. 2016). Well-being as a construct is embedded within cultural assumptions and values, which is strongly influenced by liberal individualism or socially constructed world views (for review see: Christopher, 1999). Well-being is widely understood as the interface of biological, sociocultural and psychological processes (see Stokols, 2017). This psychological orientation has been most extensively assessed, and understands well-being through the interplay of both subjective reports (e.g., subjective well-being, Diener 2000; Diener et al. 2018a; Kjell et al. 2016) and an individual's access to and engagement with environmental context; for example, community, relationships, green space and health (Steptoe et al. 2015; Diener et al. 2018b).

Indeed, the environmental values literature provide a myriad of frameworks for describing how biodiversity or experience with nature may provide health and well-being

benefits to humans. Holistic frameworks describe how biodiversity provides for the provisioning of food and raw materials to support human life (i.e., tangible benefits and ecological resilience), as well as psychological benefits, physiological benefits, decreased inflammatory and non-infectious diseases; regulation of transmission of infectious diseases; and aesthetic, cultural recreational, socio-economic, and spiritual benefits (Summers et al. 2012; Sandifer et al. 2015).

The positive psychology literature generally describes well-being through the lens of optimal functioning. This functioning has also been described in terms such as flourishing (e.g., Seligman 2012) and thriving (e.g., Brown et al. 2017), with 'well-being' representing a construct strongly embedded within the positive psychology discipline (Diener et al. 2018b). The positive psychology has brought a range of approaches to operationalise well-being, with this drawing upon hedonic, eudemonic, relational and community engagement qualities (e.g., see PERMA; Seligman, 2012).

A consistent criticism of the positive psychology literature is its individualistic orientation, where well-being is primarily understood through individual factors (e.g., needs, values, mindsets, beliefs), or a western-centric world view (Christopher and Hickinbottom 2008). Drawing upon this point, Kjell (2011) notes that well-being is largely operationalised through individualist constructions (e.g., subjective well-being). Kjell makes the argument that current individualist approaches to operationalise well-being may isolate people from nature. Integrative sustainability frameworks are therefore needed, which bridge the individualistic orientations of current well-being research and socio-ecological orientations in sustainability research.

Three positive psychology approaches that operationalise the intersection between values and well-being

Positive psychology includes a diversity of models, streams and approaches, and there is no universally accepted meta-theory (Seligman and Csikszentmihalyi, 2000). There is a lack of consistent conceptual and applied operationalisation of 'what is positive psychology' within the literature, which remains a significant impediment to the discipline's development

(for review see Pawelski 2016). Given the diversity of approaches, it was beyond the scope of this paper to review the breadth of theories and approaches that are conceptually aligned to the discipline. Instead, the paper restricted itself to three approaches that fit under the conceptual umbrella of positive psychology and consider the role of values (and/or virtues) within human behaviours and well-being outcomes. Approaches were initially isolated on the basis that there was literature supporting their conceptual alignment to positive psychology and they offered diverse insights into how values were operationalised, constructed and applied within the discipline. This was then reviewed through their (1) frequency of citation, (2) strong theoretical and/or applied research base, (3) their capacity to explain and strengthen optimal human well-being across the entire community (as opposed to solely within clinical population groups) and (4) they offered utility to guide intervention design. Based upon these criteria, the approaches of self-determination theory (SDT), acceptance and commitment therapy (ACT), and character strengths and virtues (CSV) were isolated. Importantly, it should not be inferred that individual approaches represent or speak for the entire positive psychology discipline. Each is considered in turn.

Self-Determination Theory

Self-determination theory (SDT) is described as a macro theory of human motivation and functioning (Deci and Ryan 2000a), which operationalises a range of positive psychology processes and outcomes (Sheldon and Ryan 2011). SDT is founded upon the view that humans are motivated to demonstrate effort, agency and commitment in their lives or express "inherent growth tendencies" towards optimal functioning. This growth tendency is founded upon three core or innate psychological needs that drive self-motivation. That is, all humans are driven by a motivation for (1) autonomy (control), (2) competence (worth) and (3) relatedness (connected to others). These needs are regarded as foundational to all actions, and are innate or instinctive (not learned), and express themselves across all human endeavors and contexts. SDT proposes that the degree to which any of these three psychological needs is supported (or unsupported) within a given context will have an impact on how well-being is expressed within that setting (Ryan and Deci 2000b; Deci and Ryan 2008). This restricted

psychological focus contrasts the environmental values literature which understands 'needs' through broader factors (e.g., food, shelter, see Brear et al. 2019).

SDT considers the relationships between values and well-being in different ways, in what may be regarded as 'mini-theories' (Vansteenkiste et al. 2010). Central to SDT is the motivational processes of intrinsic versus extrinsic motivation, which is also operationalised as intrinsic and extrinsic value orientations (Kasser and Ryan 1996) through the mini-theory of Goal Content Theory (Vansteenkiste et al. 2010). Intrinsic values can be defined as an individual holding aspirations (or goals) related to community support, personal growth and the development of close relationships. In contrast, extrinsic values represents aspirations and goals aligned to fame, wealth and improving reputation (Kasser and Ryan 1996). SDT seeks to understand how human actions and behaviours are influenced by both intrinsic and extrinsic motivational processes, through the mediating context of the core underlying needs (autonomy, relatedness, competence).

Acceptance and Commitment Therapy

Acceptance and commitment therapy (commonly referred to as ACT) is conceptually aligned to positive psychology (Feeney and Hayes 2016). It is a psychological intervention that brings together six key processes (acceptance, values, cognitive defusion, committed action, being present in moment [mindfulness], self as context) to support the outcome of 'psychological flexibility' (Hayes et al. 2006; Hayes 2016). This is defined as moment-to-moment mindfulness (or being present) and engaging in behaviours and actions that are consistent with chosen values. ACT seeks to bring individual mindful awareness to life and support individuals to "move towards valued behaviour" (Hayes et al. 2006). Psychological well-being is operationalised as 'value consistent living'. Psychological problems and lowered well-being are associated with a lack of values clarity (or lack of contact with values) or actions that are not values aligned (Hayes et al. 2003, 2006). Values clarification and actioning remains a key feature of ACT. It is routinely integrated within intervention

processes to identify intervention goals, motivate intervention processes and to develop future goals (Wilson and Murrell 2004).

Character Strengths and Virtues (CSV)

Character strengths and virtues (CSV), also known as 'values in action', have been developed as a set of characteristics for individuals to recognise and understand the expression of strengths (or virtues) through actions (Peterson and Seligman, 2004). The development of CSV occurred as a direct counterpart to traditional psychology's focus on categorising human deficits and disorders through the Diagnostic and Statistical Manual of Disorders (Seligman, 2015). A detailed overview of the research and applied scholarly supporting CSV the reader is directed to: www.viacharacter.org.

The most widely used tool to assess CSV is the Values in Action Inventory of Strengths (VIA-IS), or more widely known as the VIA (Peterson and Seligman 2004). This tool uses a 5-point Likert Scale to assess the degree respondents endorse 24 character strengths. Character strengths are characterised against six virtues. These virtues reflect the expression of values through actions and behaviours (expressed values).

1. **Wisdom and knowledge -** creativity, curiosity, open-mindedness, love of learning, perspective.
2. **Courage** – bravery, persistence, honesty, zest.
3. **Humanity** – love, kindness, social intelligence.
4. **Justice** – teamwork, fairness, leadership.
5. **Temperance -** forgiveness, modesty, prudence, self-regulation.
6. **Transcendence** – appreciation of beauty and excellence, gratitude, hope, humour, spirituality.

Comparing conceptualisations of values across positive psychology and environmental values literatures

In this section, we critically compare the three positive psychology approaches (SDT, ACT and CSV) against a comparative framework offered in the environmental values literature by Kenter et al. (2015). We apply Kenter's framework because it draws together

inter-disciplinary insights on values, including how they are formed and shared across individuals and groups. It helps us understand the different assumptions underpinning the conceptualisation of values across disciplines. The contents of this section are summarised in Table 1.

Value concept

The value concept refers to how values are conceptualised and measured (Kenter et al. 2015). Across all three positive psychology approaches, values can be operationalised as being transcendental in nature (i.e., guiding principles that transcend contexts). In particular, across both SDT and CSV, the construction of values is rigid and tightly operationalised as a set of beliefs about self and actions that transcend specific situations and actions. For example, in SDT, intrinsic versus extrinsic values can be operationalised as an 'orientation' to guide actions (Kasser and Ryan 1993), while in CSV character strengths represent patterns of actions (guided and informed by values) that can be overlaid across all human endeavours (Peterson and Seligman 2004). The construction of values within ACT is significantly heterogeneous and needs to be understood through a 'process' lens. Unlike SDT and CSV where values are rigidly defined around a specific content focus (e.g., strengths) or orientation (extrinsic versus intrinsic), within ACT values are operationalised as a process of clarification and actioning that are contextualised to setting. In other words, "values represent chosen qualities of personal action that can never be obtained as an object but can be instantiated moment by moment" (Hayes et al. 2006, p. 9).

Like in SDT and CSV, transcendental values, as applied to the environment, are also rigidly operationalised as concepts or beliefs, about desirable end states or behaviours and both are related to self-actualisation (see C. Raymond and Kenter 2016 for an overview of the literature). However, transcendental values (as applied through the tradition of Schwartz Value Survey; Schwartz 1992) are less inclined to be related to specific intervention goals or the expression of survival needs (Gouveia et al. 2007). In the environmental values literature, contextual values are most frequently described in terms of the values that individuals or

groups assign to people, places or things (Kenter et al. 2015), whereas in SDT and CSV values in context are linked to clarifying goals or specific actions.

Value indicators

Value-indicators refer to the way in which worth is measured, such as amounts of money, or ratings, rankings and indices within social surveys (Kenter et al. 2015). Across all three positive psychology approaches, values are predominantly assessed through self-assessment instruments. Across the SDT literature, the most widely used tool to assess value orientation is the Aspiration Index (Kasser and Ryan 1996). This self-assessment tool assesses the relative importance of different values on a continuous scale, which has been applied across a variety of disciplines (e.g., well-being, consumption and marketing, career counselling), including alongside the materialism literature (Kasser 2016). Intrinsic and extrinsic aspirations and materialism have been examined in relation to the environmental values literature (see meta-analytic review by Hurst et al. 2013). Within CSV, character strengths or values expressed through actions are assessed through the Values in Action (VIA; Park et al. 2004), which assesses the 24 character strengths across the six virtues. This tool has been validated (Peterson and Seligman 2004) and is widely applied across a variety of settings (see www.viacharacter.org), including the environmental literature (Warren and Coghlan 2016). Unlike the Aspiration Index which measures value orientation, the VIA brings a stronger behavioural focus (e.g., strengths expressed through actions). Given ACT's 'process' orientation to values, the discipline draws upon a variety of self-report tools and methods to support value clarification and assessment of expression. These tools and instruments are operationalised across both generalised settings (e.g., *Valued Living Questionnaire*, Wilson and Groom 2002) and contextualised to specific settings (e.g., *Chronic Pain Values Inventory*, McCracken and Yang 2006). To this effect, within ACT there is no singular validated tool or instrument aligned to the scholarship. Like the CSV and the VIA (but unlike the SDT and Aspiration Index), value assessment tools within ACT have been developed with a clinical or applied purpose in mind.

Consistent with SDT and CSV, in the environmental values literature, transcendental values are also generally assessed using self-report instruments, in particular the Schwartz Value Survey. The full survey entails 57 questions followed by a brief description for clarification. Each indicator is assessed on an interval scale reflecting to what extent the value is a guiding principle in one's life. The survey is used to compute 10 different value types, which can be grouped into four broad sets that form two bipolar dimensions: self-transcendence values (reflecting a concern for others like universalism and benevolence) versus self-enhancement values (reflecting a concern for oneself like power and achievement), and conservation values (security, conformity and tradition) versus openness to change values (self-direction, stimulation and hedonism) (Schwartz 2006).

While SDT brings focus to the assessment of value orientation and CSV assesses strengths through action, the environmental values literature assesses which overarching goals people find most important in life in general. It is well-established that environmental beliefs, attitudes and norms are particularly related to the self-enhancement and self-transcendence dimension (Steg et al. 2014). Self-report instruments have translated the Schwartz Value Survey into a subset of environmentally relevant values (e.g., de Groot and Steg, et al. 2007). Research has demonstrated that specific values types (e.g., biospheric) are more strongly related to pro-environmental beliefs, attitudes, norms, and actions than the other three values. In a similar vein, drawing upon the positive psychology discipline, specific individual value orientations and virtues have predictive qualities with sustainability outcomes. For example, there is strong evidence within the SDT literature supporting that an intrinsic, as opposed to an extrinsic value orientation, is a stronger predictor of sustainable behaviour (Brown and Kasser, 2005; Hurst et al. 2013). There is emerging evidence within the CSV literature that finds a relationship between collective character strengths and sustainable actions, with some strengths (appreciation of beauty, creativity, perspective and self-regulation) demonstrating a stronger association with sustainable actions (Corral-Verdugo, Tapia-Fonllem, and Ortiz-Valdez, 2015).

Value provider

The value provider concerns who provides the values under consideration (Kenter et al. 2015). Across all three positive psychology approaches, the value provider is the individual or 'personal' in nature. There is no consideration of different types of value providers (e.g., individual, group) or value hierarchies between the individual and group; however, there is a wide understanding across the broader psychology discipline that the formation and expression of values occurs through broader socialisation processes (Huston and Bentley 2010; Kendal and Raymond, C. 2019).

Despite positive psychology relying on a western-centric worldview (Christopher and Hickinbottom 2008), cross cultural investigations have occurred (e.g., SDT: Ryan et al. 1999; CSV: Dahlsgaard et al. 2005), and progress has been made to understanding value orientations through broader socio-cultural processes. The process orientation of ACT, where values are contextualised to setting, includes third-party (e.g., counsellor or clinician) awareness raising strategies to support the individual to reflect upon their values in consideration to wider socialisation processes (Wilson and Murrell 2004).

Much research on social values in the environmental values literature has also focused on the individual as the value provider. Values of the individual are traditionally aggregated together to reflect the values of a society (Raymond, C. et al. 2014). However, there is growing recognition that multiple value hierarchies exist between the individual and group (Manfredo et al. 2016). We see this in recent work showing the interactions between individual, cultural values and pro-environmental behaviour (van Riper et al. 2018).

Elicitation process

The elicitation process considers how the values are collated (elicited) from the value provider (Kenter et al. 2015). The SDT, ACT and CSV values theories rely heavily upon instrumental elicitation processes. That is, self-report assessment tools are predominately applied to elicit or support the awareness of the value or virtue being expressed. Across SDT, values are embedded within a meta-theory, and elicited with the purpose to explain behaviour, predominately within a research and theoretical lens. In contrast, both ACT and

CSV seek to elicit values within the context of an intervention, self-development or growth process (although CSV also brings a lens to research applications). This growth process is often guided by a third party (e.g., clinician, coach or counsellor) or through an external resource (completing values instruments online). We also see a focus on instrumental elicitation processes in the environmental values literature, but unlike in ACT and CSV, the focus is rarely on how values form or change through intervention. Nonetheless there is increasing scholarly interest in how deliberative settings can be used as an intervention to guide value formation and change within the individual, including supporting shared values for ecosystem management (see Kenter et al. 2016a for future directions in this field).

However, both ACT and CSV also draw upon a pragmatic paradigm whereby instrumental valuation informs a deliberative process (Raymond, C. et al. 2014). For example, across both streams, an individual may complete a self-report tool (e.g., VIA or ACT value clarification assessment) which is designed to elicit value orientations and expressions. This information is then dynamically discussed and explored within the context of a third-party discussion or external resource (e.g., online tool, book). This deliberative discussion may include questions and exercises that seek to raise awareness of values, the degree they are valued or expressed, and how their expression may change in different settings. ACT has articulated a set of intervention processes and tools to guide third party exploration (Wilson and Murrell 2004). While mixed or multi-methods studies are sometimes used to elicit social values in the environmental values literature, in most instances the underpinning assumptions of the different value elicitation processes are not made explicit to the reader. Raymond, C. et al. (2014) therefore called for much more theorisation on how social values elicited using an instrumental paradigm can inform values elicited as part of a deliberative process, and vice-versa.

Summary

This section highlights that the positive psychology approaches of SDT, ACT and CSV demonstrate significant between-approach variability in how values are operationalised. SDT and CSV operationalise values through a content focused orientation (e.g., specific

motivations, goals, virtues), while ACT considers values within a process orientation. Importantly, the positive psychology approaches adopt an individualistic lens that seeks to understand values through broader psychological needs (e.g., SDT) and processes (e.g., mindfulness), and deliberative actions (e.g., third-party clarification). This contrasts to the environmental values literature where there is a wider scope around the conceptualisation of contextual values (e.g., recognising multiple forms of valuers and valued objects), but less discussion of the role of psychological interventions on value formation or change, with the exception of research discussing the contribution of different deliberative processes on contextual value change (Raymond, C. and Kenter, 2016).

Table 1.

Comparative Summary of SDT, ACT and CSV Value Components as Mapped to Kenter et al. (2015)

	Self-Determination Theory (SDT)	Character Strengths and Virtues (CSV)	Acceptance and Commitment Therapy (ACT)
Summary	Values represent one component of a broader meta-theory of human functioning, motivation and development of personality (Deci and Ryan 2000). Values are extrapolated on a continuum of intrinsic versus extrinsic (Kasser and Ryan 1996). Their understanding and expression are mediated by three core needs: relatedness, autonomy and competence.	Character strengths represent values expressed through actions, and provide a positive or strength-focused orientation to understanding human functioning (Peterson and Seligman 2004). Individuals are supported to be aware of their character strengths and intentionally apply them in a balanced manner (e.g., not to overplay or overuse a certain strength).	Values are one of 6 key processes that underpin psychological health and 'flexibility' (Hayes et al. 2003, 2006). Values are constructed through a 'process' lens to understand difference in psychological functioning and well-being. ACT offers tools and methods for individuals to be aware of their values, and act upon their values within intentional decision making.
Value Concept	Transcendental	Transcendental	Transcendental and contextual
Value Indicator	Self-report - Aspirations Index (Kasser and Ryan 1993, 1996) assesses intrinsic versus extrinsic value orientation.	Self-report – Values in Action or VIA (Park et al. 2004) which assesses the 24 character strengths across the six virtues.	A variety of self-report tools to clarify values and assess their expression. These fall across generalised domains (e.g., The Valued Living Questionnaire, Wilson et al. 2010) and context specific domains (e.g., Chronic Pani Values Inventory, McCracken and Yang 2006).
Value Provider	Individual	Individual	Individual
Value Elicitation	Elicited instrumentally through self-report.	Elicited instrumentally through self-report but can be also be elicited in a deliberative manner through an intervention process or third-party reflection (e.g., counselling, coaching or clinical support).	Elicited instrumentally through self-report, but a key feature of ACT is that third-party (clinician, counsellor, coach) operates in a deliberative manner to clarify and assess value and their expression.

Comparing pathways for understanding the intersections between values and well-being in positive psychology and some implications for sustainability science

This section is dedicated to the second paper objective: To critically compare how positive psychology and environmental values literature have considered the intersections between values and well-being. To conduct this, we summarise how each positive psychology approach reviews the relationship between values and well-being. We identify two key pathways by which operationalise this relationship and then we compare this with the environmental values literature.

Table 2 summarises the scholarly relationship between the three positive psychology approaches and well-being. A review of the SDT literature finds that an intrinsic, as opposed to extrinsic, value orientation is associated with higher levels of well-being (Hurst et al. 2013). The CSV literature finds that collective character strengths are predictive of higher well-being, however, within this, specific virtues have a stronger predictive relationship (Park et al. 2004). The CSV literature posits that the congruent expression of self-identified character strengths as being foundational to healthy functioning (Peterson and Seligman, 2004). The ACT literature supports a conceptual (as opposed to empirical) relationship between the expression of values and well-being, as mediated by other psychological processes (Hayes et al. 2006).

Table 2.

Positive Psychology Approaches and the Scholarly Relationship Between Values and Well-being

Positive Psychology Approach	**Scholarly Relationship between Values and Well-being**	**Dominant Pathway**
Self-Determination Theory	Well-being is associated with an intrinsic as opposed to an extrinsic value orientation.	Healthy Values
Character Strengths and Virtues (CSV)	Well-being is associated with the activation of self-identified character strengths and virtues.	Healthy Values
	Well-being is more strongly associated with specific character strengths and virtues.	Value Activation
Acceptance and Commitment Therapy	Well-being is conceptually related with the congruent expression of values, as mediated by other psychological processes (e.g., mindfulness).	Value Activation

A review of Table 2 indicates that the relationship between well-being and values across the three positive psychology approaches can be characterised by two distinct pathways. The first pathway identifies a relationship between identified values and well-being outcomes. In other words, certain value types are associated with healthy outcomes for the individual. For this reason, we have titled this the *healthy values pathway*. The second pathway is not content dependent but talks to the congruent expression of self-identified values and how this is related to higher levels of well-being. We have titled this the *value activation pathway* as it talks to the energisation of values through actions. We now further define these pathways and then compare them with the environmental literature.

Healthy Values Pathway

This pathway is founded upon the proposition that certain values satisfy psychological needs (e.g., growth and self-actualization) and this directly promotes subjective well-being (e.g., Sagiv and Schwartz 2000; Bobowik et al. 2011). In other words, certain value orientations or expressed value strengths (CVS) are associated with higher levels of well-being. To this effect, research has found that individual character strengths or virtues (e.g.,

hope, zest, gratitude, love, and curiosity) are more strongly related to well-being (Park et al. 2004). The healthy values perspective is based on self-determination theory (Ryan and Deci 2000b), which holds that intrinsic values reflecting psychological growth, community and relationships are associated with well-being, while extrinsic ones, oriented towards obtaining others' approval, admiration and praise, undermine it. Various studies have confirmed this hypothesis (Vansteenkiste et al. 2006), including cross-culturally (Schmuck et al. 2000).

The healthy values pathway has multiple implications for sustainability science. First, as noted within this paper, given the predictive properties of intrinsic value orientations and character strengths (in general) on both well-being and sustainability outcomes, they should be considered within intervention design (see following section case example). Second, it is important to consider the character strengths of the individual when striving to improve human well-being through nature-based solutions (NBS). Existing frameworks assume that experiences in nature provides for a range of subjective and objective well-being outcomes (van den Bosch and Ode Sang 2017; Kabisch et al. 2017; Raymond C et al. 2017), but ignore which types of value strengths are most realised in nature, and the pathways through which these nature exposure and value strength relationships contribute to well-being. Second, meta-frameworks for assessing the material, non-material and regulating contributions of nature to people, including multiple facets of human well-being, emphasise intrinsic, relational and instrumental values (Diaz et al. 2018; Chan et al. 2016; Pascual et al. 2017). These overlook character strengths within the individual that are essential to the good life. Sustainability science would benefit from new classifications of human-nature relationships that consider the intersections among ecosystem services, well-being and character strengths and virtues.

Value Activation Pathway.

It is generally recognised that values give meaning to, energise, and regulate value-congruent behaviour and well-being, but only if values are cognitively activated and central to the self (Verplanken and Holland 2002; Sortheix and Schwartz 2017). Value activation refers to the process of 'putting values into action', or in other words, processes which enable individuals to demonstrate behaviour that is consistent with their self-related attitudes, traits or norms. Activation generally occurs after raising individual awareness (or clarification) of these constructs (Verplanken and Holland 2002).

Thus, much effort is devoted in positive psychology (specifically ACT and CSV) to intentionally delivered interventions which support value congruent actions or decision making. Well-being is influenced by the fit between an individual's values and the opportunities and constraints in the environment (Sagiv and Schwartz 2000; Sortheix and Lönnqvist 2014; Sortheix and Schwartz 2017). It is posited that individuals will display high levels of well-being when there is a close fit between an individual's values and the opportunities and constraints in the environment.

Value activation is rarely considered in sustainability science; thus we offer a number points for future consideration. First, we encourage a shift from assessing the overarching goals people find most important in life in general and their relationships to behaviour, to an assessment of how, and by which mechanisms, values are placed into action. Second, rather than assessing the content and structure of values and their effect on behaviour or environmental change, we require more studies that explore or examine the level of fit between one's existing values and both sustainability and well-being outcomes. Third, there is a need to isolate key deliberative and psychological processes that facilitate the identification and activation of values within sustainability contexts. The next section discusses mindfulness as a key point of consideration.

Integrating insights to inform the design and implementation of sustainability interventions

The previous section has uplifted the pathways of value activation and healthy values, as related to the intersection of values and well-being. Several broad considerations for sustainability science have been offered. In this section, we draw upon these themes and offer more specific considerations for the positive psychology and environmental values literatures to deliver well-being and sustainability outcomes. This responds to the third objective of the paper (considerations for integrative interventions). We conduct this by suggesting that mindfulness represents a point of conceptual and disciplinary integration. We conclude with a case example that operationalises a sustainability intervention that draws upon outcomes and methods from both disciplines, and includes the pathways of value activation and healthy values.

Mindfulness as a Point of Conceptual and Disciplinary Integration

Both positive psychology and sustainability science draw upon a range of different intervention methods and approaches. Within positive psychology, these are referred to as positive psychology interventions (PPIs). PPIs have emerged as empirically tested strategies, exercises and activities designed to promote happiness and well-being (Parks and Schueller, 2014). A PPI that crosses over into the sustainability literature is mindfulness (Ericson et al. 2014; Wamsler et al. 2018). Mindfulness can be defined as the self-regulation of attention with a mindset of curiosity, openness and acceptance (Bishop et al. 2004). As noted within an earlier section of this paper, mindfulness supports deliberative processes within both ACT (Hayes 2016) and CSV (Niemiec 2014, 2017).

Within the environmental values literature, there is emerging evidence that mindfulness has a role to explain the relationship between intrinsic values, well-being and pro-social behaviour (see review by Fischer, Stanszus, Geiger, Grossman, and Schrader, 2017). Mindfulness therefore represents both a possible outcome of interventions, but also an intervention point in its own right. Recent scholarly work has identified that mindfulness may be a key ingredient between the nexus between well-being and sustainability research

(Wamsler and Brink, 2018; Ericson et al, 2014), and method to support human adaptation to climate change (Wamsler and Brink, 2018). It has been argued that it represents a process and outcome that can be operationalised at the individual, organisational, society and global level across sustainability science (Wamsler et al. 2018).

There has been emerging evidence for the role of mindfulness to promote well-being and sustainable behaviour through the pathway of value activation or congruency (see reviews by Fisher et al. 2017; Ericson et al. 2014). We argue that mindfulness interventions (or mindfulness-based PPIs) could be applied as a method to clarify and activate values within a nature exposure context, which harnesses the qualities of both the environmental values and positive psychology scholarship. It represents a possible point for conceptual and disciplinary integration. The following case example goes beyond current conceptualisations of mindfulness by considering it alongside other intervention processes and outcomes, and operationalising it through the intentional practice elements of (1) awareness, (2) skills and (3) mindsets. This offers a more granular and nuanced operationalisation of mindfulness than has traditionally occurred in the sustainability literature.

Case Example: Integrating Disciplines through an Intentional Practice Method

The following case example offers new insights into the design and implementation of interventions intended to deliver sustainability and well-being outcomes. To uphold robust intervention principles (see Raymond, I. 2018a), the case example is operationalised through the methodology of 'intentional practice'. It is an approach that offers utility to describe and categorise psychologically focused interventions across disciplines and contexts, and at individual, program and system levels (Raymond, I, 2018a, 2018b; Raymond, I. et al. 2018). It represents a cross-disciplinary methodology that responds to the call for social-ecological integration, or the conceptual, methodology, disciplinary and functional integration of social and ecological science (Guerrero et al. 2018).

Intentional practice asks sustainability scientists to bring ongoing 'mindful awareness' to intervention outcomes (or the 'what') and the method and processes to deliver them (or the 'how'). Drawing upon an intentional practice model (Raymond, I. 2018a; Raymond et al. in

press), Table 3 provides a case example of a community focused sustainability intervention that is designed to deliver a hierarchy of outcomes (well-being and sustainability focused). The long-term outcome of the intervention includes increased landowner tree planting and increased levels of subjective well-being. The medium-term, or intermediate outcome of the intervention, is to foster community actions where individuals activate and express intrinsic values. The self-determination literature supports the relationships between intrinsic values and sustainability outcomes (Kasser, 2016). This is also representative of the healthy-values pathway (positive relationship between intrinsic values and well-being). The intervention brings focus to several short-term outcomes. These represent the immediate focus or 'growth intent' of the intervention and are categorised using the positive psychology descriptors of (1) awareness (knowledge, insight), (2) skills (expressed actions or coping response) and (3) mindsets (thoughts/attitudes about self, others and world). The specific short-term intervention outcomes are provided in Table 3 and all intervention outcomes have a conceptual or evidence-informed relationship with the medium-term outcomes. As noted in Table 3, mindfulness is operationalised as (1) awareness ('what is mindfulness'), (2) skill (mindful awareness of values in decision making) and (3) mindset (mindful orientation).

Table 3.

A Well-being and Sustainability Intervention Operationalised Through an Intentional Practice Methodology

Intervention Components ('How")	**Hierarchy of Outcomes ('What')**		
	Short-Term (Growth Intent)	**Medium-Term**	**Long-Term**
1. Mindfulness training in nature (PPI) 2. Nature exposure 3. Education on the relationship between intrinsic values and well-being, and 'what is mindfulness' 4. Deliberative processes to bring ongoing awareness to 'what is important' 5. Providing call to action activities that are associated with intrinsic values (e.g., providing trees or seedlings for planting).	**Awareness** Intrinsic values are associated with well-being outcomes Self-identified personal values or character strengths 'What is mindfulness' **Skills** To bring mindful awareness to values (or character strengths) and to activate them within decision making (value activation) **Mindsets** "I value health, community and family" (intrinsic orientation) "In nature I can bring awareness to what is important in my life". "I adopt an open and non-judgmental lens to my experiences" (mindful orientation)	Actions aligned with intrinsic values – including spending time with family, friends, community and healthy choices (healthy values).	Well-being (satisfaction with life) Environmental actions (increased tree planting by community landowners)

Note: This framework is founded upon the Life Buoyancy Model (LBM), a growth-focused model of intentional practice (Raymond, I., 2018). The LBM has an additional feature titled 'activating processes' which operationalises 'how' an intervention component delivers it stated outcomes. This feature has not been included or operationalised in the case example.

The intervention components represent 'how' the intervention is delivered, or the key activities or service features associated with the hierarchy of outcomes. In the case example, there are five key intervention components that draw upon both the positive psychology and sustainability literature. They include mindfulness training (PPI), education, call to action, deliberative processes and nature exposure. Each component has a conceptual, logical or evidence-informed relationship with a short-term outcome. The case example operationalises

both the healthy values and value activation pathways within intervention design and implementation.

This case example offers several key points for future considerations. First, it highlights the possibilities for the sustainability (including environmental values) and positive psychology literatures to design and implement interventions that brings focus to both well-being and sustainability outcomes, in a manner that considers the intersection with value pathways and intervention components drawn from both disciplines. Second, it demonstrates how different intersection pathways between values and well-being can be applied alongside each other. Further research is required to identify whether a specific pathway has a stronger relationship with well-being and/or sustainability outcomes. Third, sustainability and well-being outcomes can be operationalised through the constructs of awareness, skills and mindset.

Conclusions

The positive psychology and sustainability literatures bring different lenses to understanding the intersection between values and well-being. The individualist orientation of positive psychology is contrasted to the system-based orientation of sustainability science. We hold the view that both lenses complement one another, and the intersection of values, well-being and sustainability outcomes will require an understanding of individual within context. We have also highlighted that the positive psychology literature offers a more nuanced understanding of values and well-being than is traditionally seen in sustainability science. This recognises the role of broader psychological processes (e.g., mindfulness) and needs (e.g., relatedness, autonomy, competence), and distinct pathways ('value activation' and 'healthy values') that addresses the relationship between values and well-being outcomes.

Importantly, this paper has demonstrated that the science of sustainability and well-being can be operationalised and integrated alongside each other through intentional program design and implementation. Across sustainability science, Guerrero et al. (2018) have argued for stronger social-ecological integration, at the conceptual, methodology, disciplinary and

functional levels. We have offered key insights that talk to all four layers. Further multi-disciplinary scholarly work is required to consistently operationalise the constructs for conceptual alignment, and to identify frameworks that support functional and methodological integration. We hope the paper has triggered scholarly interest amongst sustainability and positive psychology scientists to progress this collective endeavour.

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